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Subject:	HPS Initial Observations
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Folks,

Here are some very draft observations based on the data that Bill has provided:

- There appears to be little, if any, correlation between targeting a location for a biased sample based on towed array results and the probability that the sample will yield a result above the cleanup requirement.using the 3 stdev rule
- The number of samples exceeding the cleanup level for the three pads requiring remediation matches almost exactly what one would expect based on a normal distribution fitted to the systematic sample results from each pad (i.e., the right tail of the distribution is bleeding over the 1.48 pCi/gr cleanup level for some of the pads)
- Ra-226 activities are much noisier than Bi-214 counterparts (2 to 4 times as much relative variability)
- If Bi-241 is used with a cleanup goal of 1.41 based on background data, instead of 17 sample hits for the 3 pads requiring remediation, there would only be 4 sample hits (1 pad with hits rather than 3).
- Conclusion is that for these three pads, about 75% of cleanup level exceedances is explainable by noise in the Ra226 activity concentrations, and the remaining 25% associated with differences in the average activity concentration in the pads.
- Even the most heavily contaminated pad (Pad 284) had an average activity concentration of only ~0.9 pCi/g for Ra-226, well within typical radium-226 background levels commonly observed at other sites. If a Student t test were applied to the systematic sample results, the pad would have passed (i.e., the estimated average concentration was low enough that it would be highly unlikely that the true average concentration was above 1.48 pCi/g). Likewise, if a MARSSIM Sign test were applied to the 18 systematic sample results, the pad would also have passed.
- Based on these three pads, it would appear that being consistent with MARSSIM's interpretation of the DCGL requirement would have meant no remediation was necessary (this doesn't account for the possible need for a DCGLemc)

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